
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: October 2005

Questions regarding this report should be directed to:

Jim Sung

California Department of Water Resources
Division of Environmental Services
3251 S Street
Sacramento, CA 95816-7017

Telephone: (916) 227-7520
sung@water.ca.gov

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1. SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

As per SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions, the California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. Conditions of channel water salinity in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance". The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Classification
C-2*	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Classification
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are also included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

* Throughout the report, the representative data from nearby USBR station is used in lieu of data from station C-2.

2. Monitoring Results

2.1 Channel Water Salinity Compliance

During the month of October, 2005, salinity conditions at all five compliance stations are in compliance with channel water salinity standards of SWRCB (Table 1). Compliance with standards for the month of October was determined for each compliance station by comparing the progressive daily mean of high-tide specific conductance (SC) with respective standards. The standard for compliance stations C-2, S-64, S-49, S-42 and S-21 were 19.0 mS/cm during October 2005. Table 1 lists monthly mean high-tide SC at these compliance stations. The progressive daily mean (PDM) is the monthly average of both daily high-tide SC values. The mathematical equation is shown below.

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\text{\# days of the month}}$$

2.2 Delta Outflow

Outflow for October 2005 started off around 7,000 cfs and inched up to about 8,000 cfs by October 4, 2005. Thereafter, it took a drop and continued to decrease to about 4,000 by November 11, 2005. A small amount of precipitation in mid-October resulted in a small outflow increase of about 5,500 cfs, however, it soon declined thereafter. Two more precipitation events occurred in late October and outflow for the remainder of the month went up and down but remained within 2,500 cfs and 5,000 cfs range. The monthly Delta outflow is represented by the mean Net Delta Outflow Index (NDOI). The NDOI is the estimated daily average of Delta outflow. Mean NDOI for October is listed below:

Month	Mean NDOI (cubic feet per second)
October	4,794

2.3 Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during October 2005 was low. The largest precipitation occurred on October 28 with the daily total of 0.11 inches.

Month	Total Rainfall (inches)
May	0.24

2.4 Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during October 2005 is summarized below.

Date	Gate status	Flashboards status	Boat Lock status
October 1-31	Open	Out	Closed

During October 2005, SMSCG operation was not initiated because water quality conditions in the marsh were favorable and salinity levels were well below the monthly standard.

3. Discussion

3.1 Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

3.2 Observations and Trends

3.2.1 Conditions during the Reporting Period

During October 2005, salinity levels at Collinsville(C-2), National Steel(S-64), Beldons (S-49), Sunrise Club(S-21), and Volanti(S-42) were no higher than 13.5 mS/cm as shown in Figure 1. At the two monitoring stations, S-97 and S-35, salinity levels were no higher than 14.0 mS/cm as shown in Figure 2. Salinity levels at both eastern and western marsh stations started off below 12.0 mS/cm and 13.0 mS/cm, respectively. For the most part of October, salinity levels stabilized and minimally inched up a bit towards the later part of the month, but salinity condition was never a concern throughout October. As a result of the good water quality condition, the SMSCG were not operated.

Overall, salinity levels were well below standards at all compliance and monitoring stations.

3.2.2 Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for October 2005 were compared with means for those months during the previous nine years (Figure 4).

Means salinity pattern of all compliance and monitoring stations are similar to that of 1996, but slightly lower in magnitude. Compared to previous nine years, October 2005 salinity levels were ranked eighth in high Specific Conductance.

Table 1**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations****October 2005**

Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	5.1	19.0	Yes
S-64	9.2	19.0	Yes
S-49	12.3	19.0	Yes
S-42	12.8	19.0	Yes
S-21***	13.3	19.0	Yes

*milliSiemens per centimeter

**The representative data from nearby USBR station is used in lieu of data from station C-2.

*** S21 had days of missing salinity data due to power failure. However, the number of missing data is not enough to alter the outcome of end of month PDM value.

Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance for October 2005

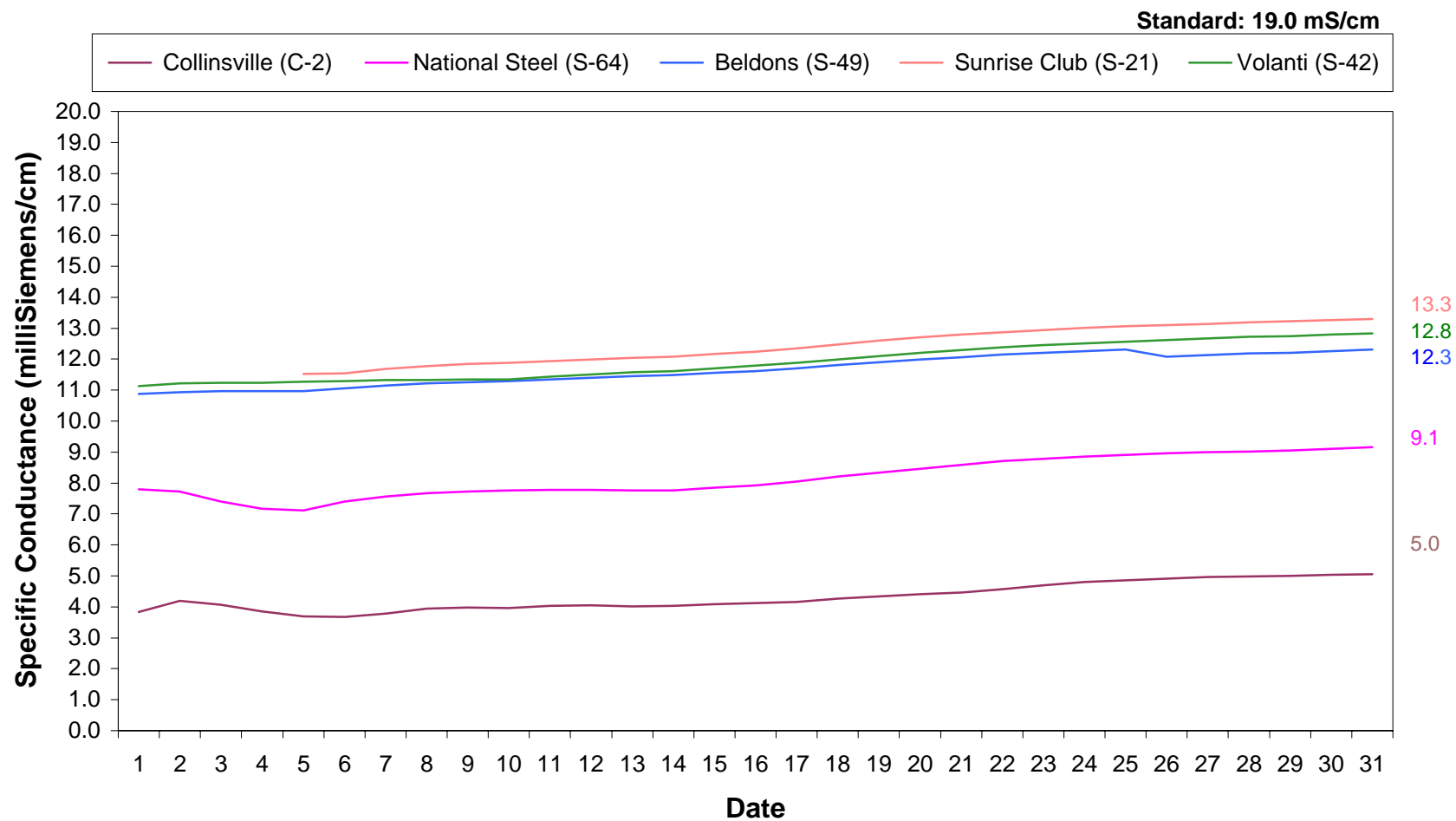
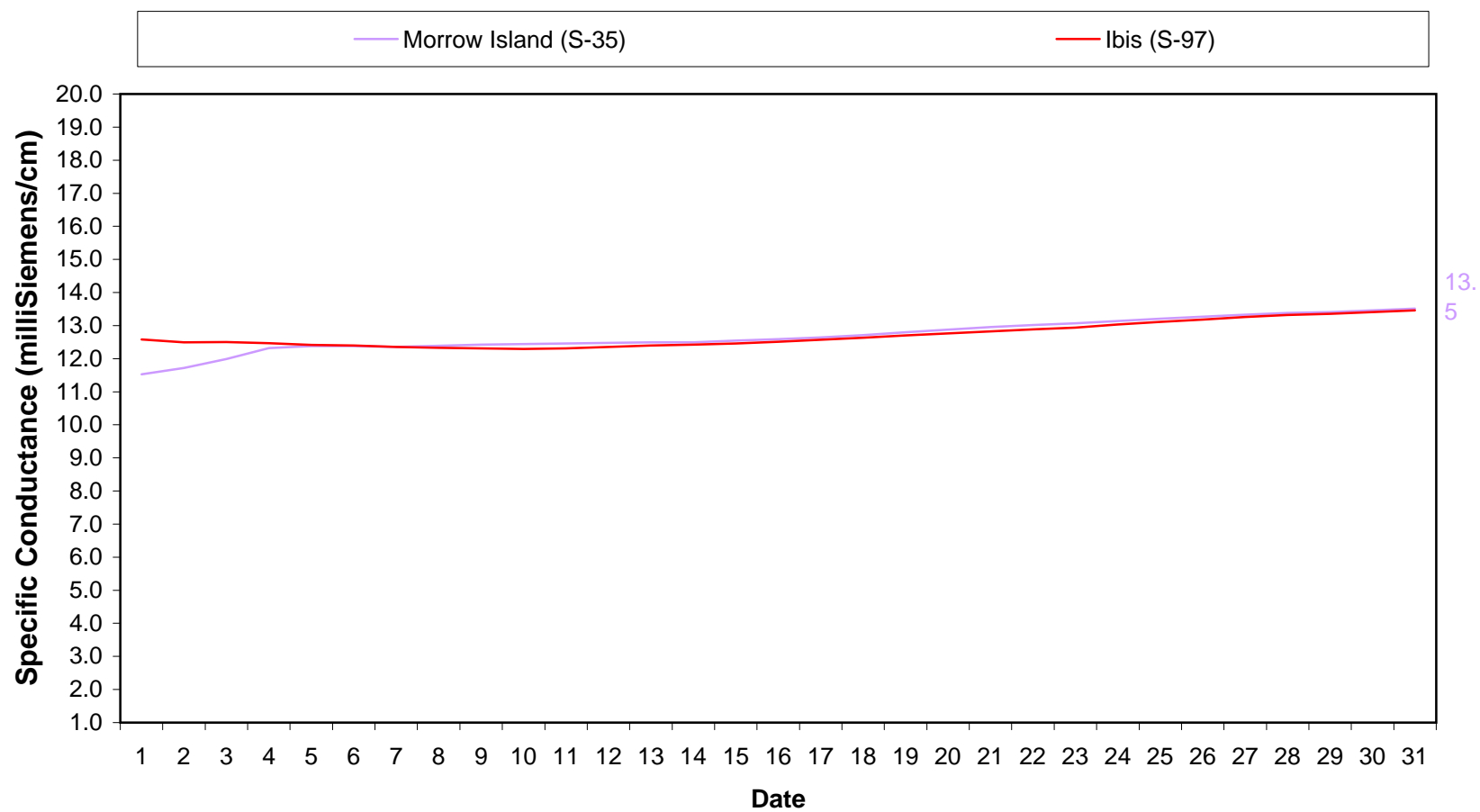
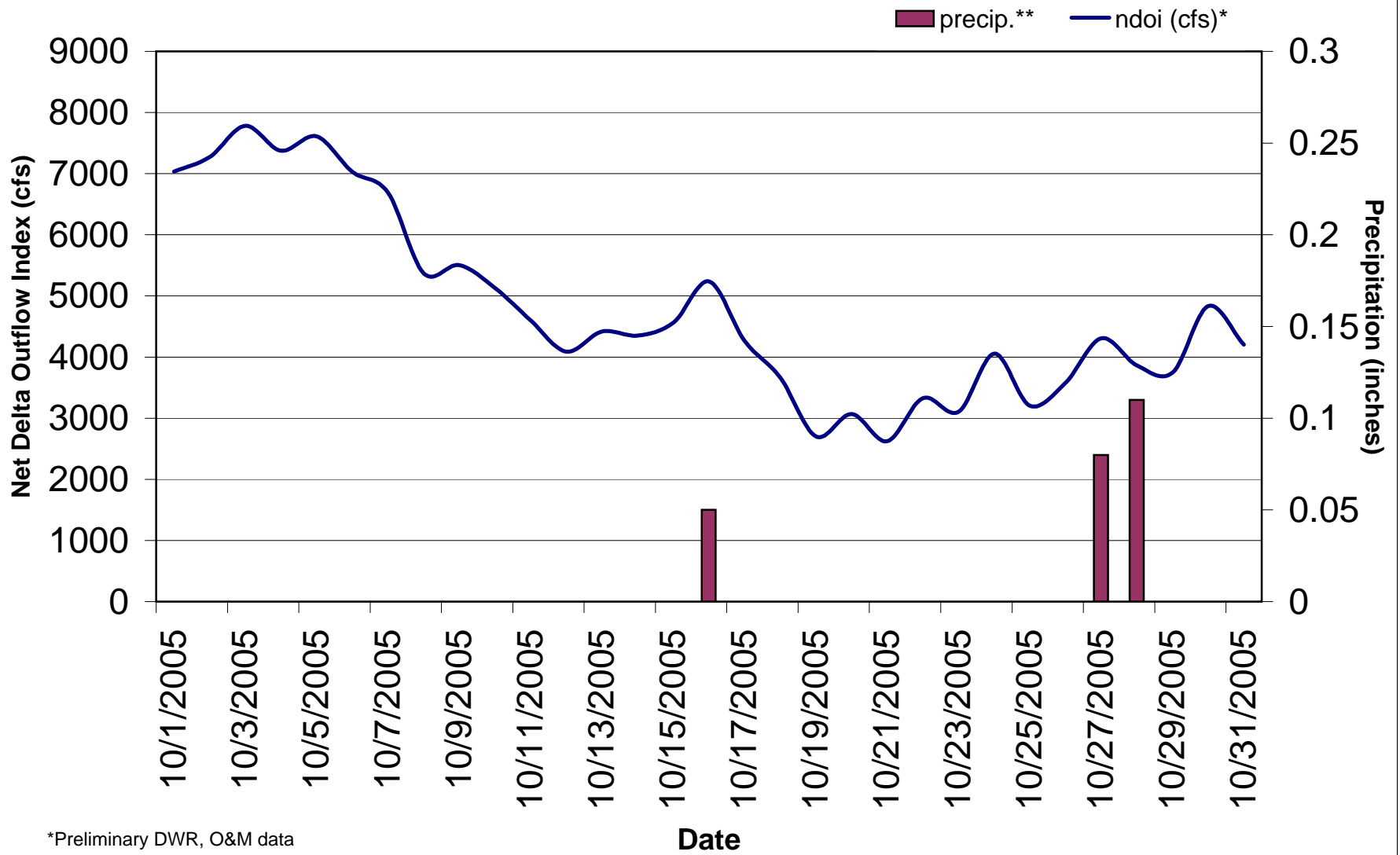


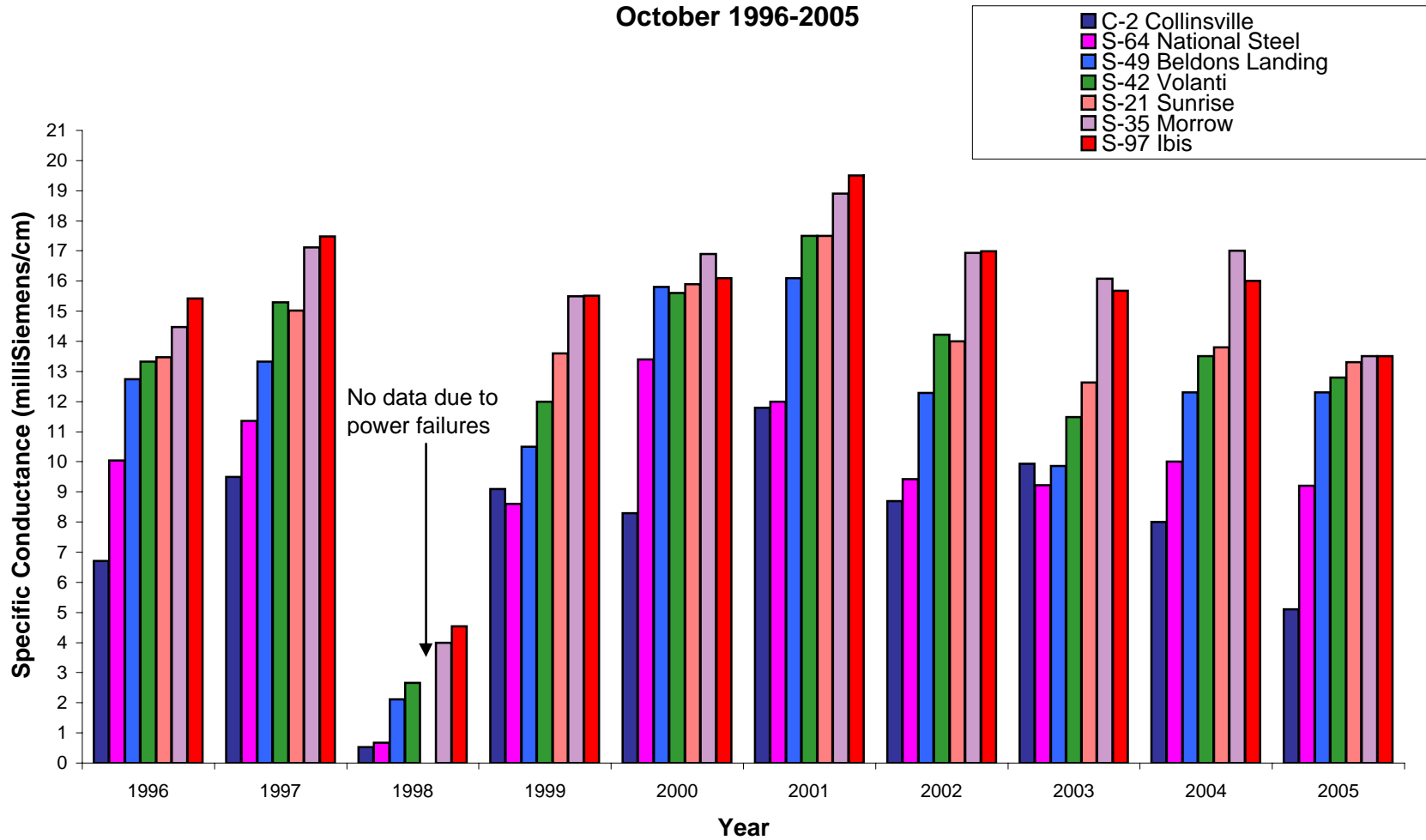
Figure 2. Suisun Marsh Progressive Mean High-Tide Specific Conductance For October 2005

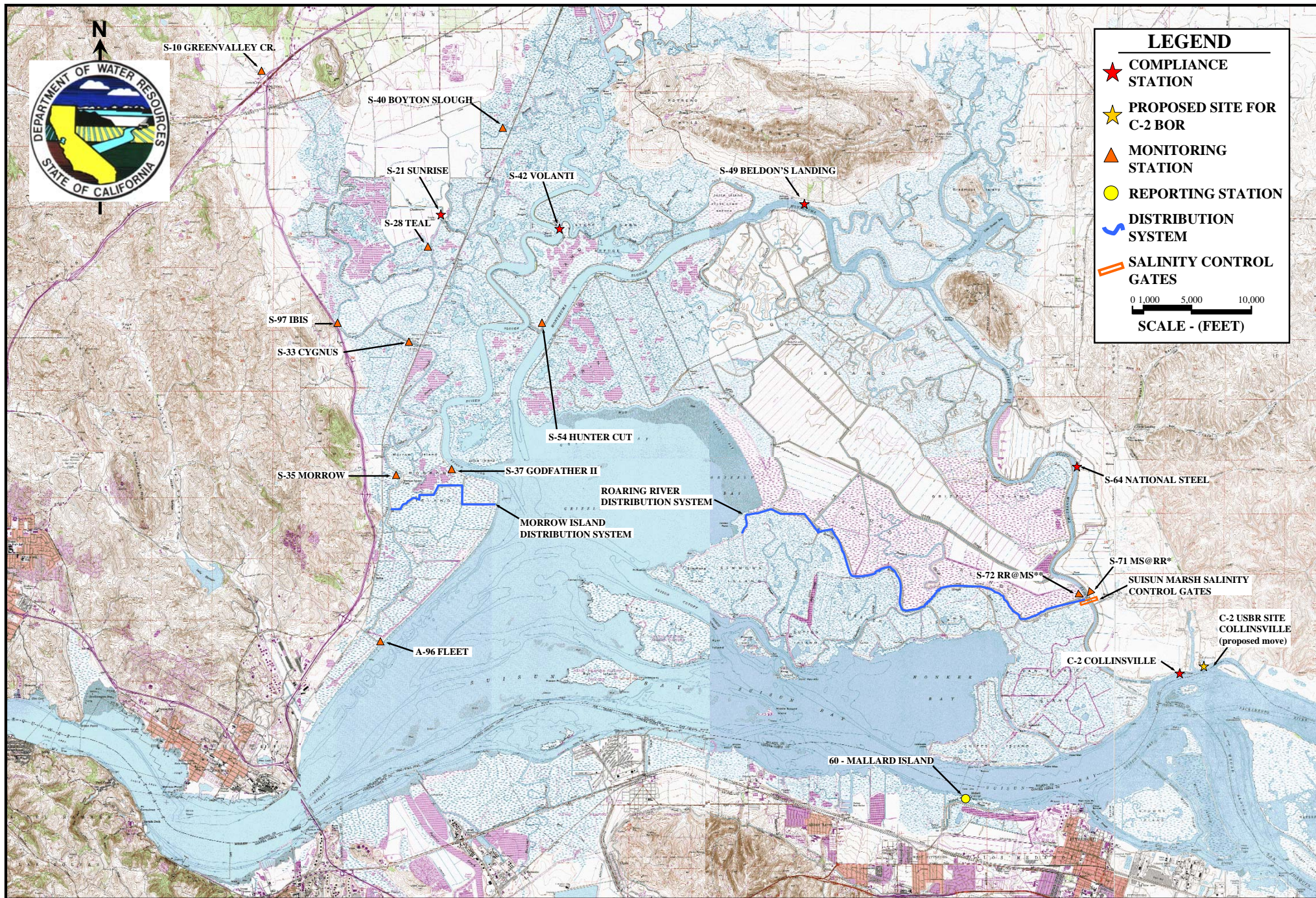


**Figure 3. Daily Net Delta Outflow Index and Precipitation
October 2005**



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
October 1996-2005**





SUISUN MARSH PROGRAM WATER QUALITY MONITORING AND CONTROL FACILITIES